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Attorney Docket Number: 24061.39 / 2003-0030
Customer No. 42717

REMARKS

Claims 1-24 were originally filed in the present application. Claims 8 and 13-24 were subsequently cancelled without prejudice or disclaimer, and claims 25-37 were added. Claims 3, 5, 6, 27, 30, and 35-37 are currently cancelled without prejudice or disclaimer, and new claims 38-43 are currently added. Accordingly, claims 1, 2, 4, 7, 9-12, 25, 26, 28, 29, 31-34, and 38-43 are currently pending in the present application.

Reconsideration of this application in light of the above amendments and the following remarks is requested.

Interview Summary

On February 16, 2006, a telephonic interview was conducted between the Examiner and David M. O'Dell, attorney for Applicant. During the interview, the Examiner agreed to consider written amendment of claim 25 to resolve any ambiguity that may have previously existed due to typographical error. The interview discussion also regarded the meaning of the terms "on," "over," "adjoin," and "contiguous."

Rejections under 35 U.S.C. §112

Claims 25-34 have been rejected under 35 U.S.C. §112, first and second paragraphs. Specifically, claim 25 has been rejected due to a typographical error. However, it is believed that the present amendment of claim 25, correcting the inadvertent typographical error, resolves any ambiguity that may have previously existed. Accordingly, Applicant respectfully requests the Examiner withdraw the §112 rejection of claim 25 and its dependant claims.

Rejections under 35 U.S.C. §102(b): Wolf

Claim 1

Claim 1 recites:

1. A method of manufacturing a microelectronics device, comprising:
providing a substrate having an active layer, a dielectric layer and a structural layer, wherein the active layer is formed over the dielectric layer and the dielectric layer is formed over the structural layer;

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forming an opening through the active layer thereby exposing a surface of the dielectric layer and defining active layer sidewalls;
cleaning the exposed surface of the dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and then forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning one of the active layer sidewalls;
and
forming a gate electrode over the active layer.

Claim 1 was rejected under 35 U.S.C. §102(b) as being anticipated by Wolf, *Silicon Processing for the VLSI Era, Vol. 2*, pages 354-355 ("Wolf"). To sustain this rejection, Wolf must contain all of the above elements of claim 1. However, Wolf fails to disclose cleaning an exposed surface of a dielectric layer after forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and then forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

Therefore, the §102(b) rejection of claim 1 is not supported by Wolf. Consequently, Applicant respectfully requests the Examiner withdraw the §102(b) rejection of claim 1 in view of Wolf.

Rejections under 35 U.S.C. §102(b): Sun

Claim 1

Claim 1 was also rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,150,286 to Sun, et al. ("Sun"). To sustain this rejection, Sun must contain all of the elements of claim 1. However, Sun fails to disclose cleaning an exposed surface of a dielectric layer after forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and then forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

Therefore, the §102(b) rejection of claim 1 is not supported by Sun. Consequently, Applicant respectfully requests the Examiner withdraw the §102(b) rejection of claim 1 in view of Sun.

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Rejections Under 35 U.S.C. §103: Wolf

Claim 1

Claims 3-7, 9, 11 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wolf. Applicant traverses this rejection on the grounds that Wolf is defective in establishing a *prima facie* case of obviousness with respect to claim 1 and, thus, its dependent claims.

As the PTO recognizes in MPEP § 2142:

... The Examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the Examiner does not produce a prima facie case, the Applicant is under no obligation to submit evidence of nonobviousness...

It is submitted that, in the present case, the Examiner has not factually supported a *prima facie* case of obviousness for the following mutually exclusive reasons.

1. Wolf does not teach the claimed subject matter

As provided in 35 U.S.C. §103:

A patent may not be obtained ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains ... (Emphasis added)

Thus, when evaluating a claim for determining obviousness, all limitations of the claim must be evaluated. However, Wolf fails to teach cleaning an exposed surface of a dielectric layer after forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and then forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

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Nonetheless, the Examiner asserts that it would have been obvious to one of ordinary skill in the art to clean the surface of a layer between process steps using conventional methods in order to remove any contamination and etching residues. However, as provided in MPEP §2144.03, it is not appropriate for the Examiner rely solely on "common knowledge" in the art, without evidentiary support in the record, as the principal evidence upon which a rejection is based. Thus, to support the Examiner's assertion, the Examiner must cite evidentiary support for the alleged obviousness of the cleaning step recited in claim 1.

The Examiner also alleges that because Applicant did not traverse the previously-alleged conventionality of such cleaning, which was recited in the previous office action, then such conventionality is taken to be admitted prior art. However, the Examiner has merely alleged that the use of a cleaning process between process steps is common knowledge, but the Examiner has not alleged, nor provided evidentiary support for, the specific sequence of process steps now recited in claim 1. That is, the Examiner has not provided evidentiary support for, nor alleged the conventionality of, the process sequence of cleaning an exposed surface of a dielectric layer *after* forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and *then* forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

Thus, for this mutually exclusive reason, the Examiner's burden of factually supporting a *prima facie* case of obviousness under 35 U.S.C. §103 clearly cannot be met by Wolf with respect to claim 1 and its dependent claims.

2. The modification of Wolf is improper

There is another mutually exclusive and compelling reason why Wolf cannot be applied to reject claim 1 and its dependent claims under 35 U.S.C. §103. The MPEP provides in §2142 that:

...the Examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made.....The Examiner must put aside knowledge of the Applicant's disclosure, refrain from using hindsight, and consider the subject matter claimed 'as a whole'.

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Here, Wolf fails to teach or even suggest the desirability of the Examiner's modification to arrive at the presently-claimed subject matter of claim 1 and its dependent claims since, even with such modification, and as implicated by the Examiner, Wolf would still fail to teach cleaning an exposed surface of a dielectric layer after forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and then forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

Thus, it is clear that Wolf fails to provide any incentive or motivation supporting the desirability of the Examiner's modification to arrive at the presently-claimed subject matter of claim 1. Therefore, there is simply no basis in the art for modifying Wolf to support a 35 U.S.C. §103 rejection of claim 1 and its dependent claims.

In this context, the courts have repeatedly held that, absent some teaching, suggestion or incentive supporting modification, obviousness cannot be established by modifying the teachings of the prior art to produce the claimed invention. In the present case, it is clear that the Examiner's modification can arise solely from hindsight based on the invention and without any showing, suggestion, incentive or motivation in Wolf for the modification as applied to claim 1.

Therefore, for this mutually exclusive reason, the Examiner's burden of factually supporting a *prima facie* case of obviousness under 35 U.S.C. §103 clearly cannot be met with respect to claim 1 and its dependent claims.

Rejections Under 35 U.S.C. §103: Sun

Claim 1

Claims 3-7, 11 and 12 were also rejected under 35 U.S.C. §103(a) as being unpatentable over Sun. Applicant traverses this rejection on the grounds that Sun is defective in establishing a *prima facie* case of obviousness with respect to claim 1 and its dependent claims for the following mutually exclusive reasons.

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1. Sun does not teach the claimed subject matter

As described above, when evaluating a claim for determining obviousness, all limitations of the claim must be evaluated. However, Sun fails to teach cleaning an exposed surface of a dielectric layer after forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and then forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

Nonetheless, the Examiner asserts that it would have been obvious to one of ordinary skill in the art to clean the surface of a layer between process steps using conventional methods in order to remove any contamination and etching residues. However, as provided in MPEP §2144.03, it is not appropriate for the Examiner rely solely on "common knowledge" in the art, without evidentiary support in the record, as the principal evidence upon which a rejection is based. Thus, to support the Examiner's assertion, the Examiner must cite evidentiary support for the alleged obviousness of the cleaning step recited in claim 1 and its dependent claims.

The Examiner also alleges that because Applicant did not traverse the previously-alleged conventionality of such cleaning, which was recited in the previous office action, then such conventionality is taken to be admitted prior art. However, the Examiner has merely alleged that the use of a cleaning process between process steps is common knowledge, but the Examiner has not alleged, nor provided evidentiary support for, the specific sequence of process steps now recited in claim 1. That is, the Examiner has not provided evidentiary support for, nor alleged the conventionality of, the process sequence of cleaning an exposed surface of a dielectric layer *after* forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and *then* forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

Thus, for this mutually exclusive reason, the Examiner's burden of factually supporting a *prima facie* case of obviousness under 35 U.S.C. §103 clearly cannot be met by Sun with respect to claim 1 and its dependent claims.

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2. The modification of Sun is improper

There is another mutually exclusive and compelling reason why Sun cannot be applied to reject claim 1 and its dependent claims under 35 U.S.C. §103. The MPEP provides in §2142 that:

...the Examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made.....The Examiner must put aside knowledge of the Applicant's disclosure, refrain from using hindsight, and consider the subject matter claimed 'as a whole'.

Here, Sun fails to teach or even suggest the desirability of the Examiner's modification to arrive at the presently-claimed subject matter of claim 1 since, even with such modification, and as implicated by the Examiner, Sun would still fail to teach cleaning an exposed surface of a dielectric layer after forming an opening through an active layer formed over dielectric layer, wherein the cleaning includes plasma cleaning employing an etch chemistry containing at least one of fluorine and a fluorine-containing gas, and then forming a spacer covering a portion of the cleaned, exposed dielectric layer surface and substantially spanning a sidewall of the active layer, among other elements recited in claim 1.

Thus, it is clear that Sun fails to provide any incentive or motivation supporting the desirability of the Examiner's modification to arrive at the presently-claimed subject matter of claim 1. Therefore, there is simply no basis in the art for modifying Sun to support a 35 U.S.C. §103 rejection of claim 1 and its dependent claims.

In this context, the courts have repeatedly held that, absent some teaching, suggestion or incentive supporting modification, obviousness cannot be established by modifying the teachings of the prior art to produce the claimed invention. In the present case, it is clear that the Examiner's modification can arise solely from hindsight based on the invention and without any showing, suggestion, incentive or motivation in Sun for the modification as applied to claim 1.

Therefore, for this mutually exclusive reason, the Examiner's burden of factually supporting a prima facie case of obviousness under 35 U.S.C. §103 clearly cannot be met with respect to claim 1 and its dependent claims.


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Conclusion

It is clear from all of the foregoing that independent claims 1 and 25 are in condition for allowance. Dependent claims 2, 4, 7, 9-12, 26, 28, 29, 31-34, and 38-43 depend from and further limit independent claims 1 and 25 and, therefore, are allowable as well.

It is believed that all matters set forth in the Office Action have been addressed, and that claims 1, 2, 4, 7, 9-12, 25, 26, 28, 29, 31-34, and 38-43 are in condition for allowance. Favorable consideration and an early indication of the allowability of the claims are respectfully requested. Should the Examiner deem that an interview with Applicant's undersigned attorney would expedite consideration, the Examiner is invited to call the undersigned attorney at the telephone number indicated below.

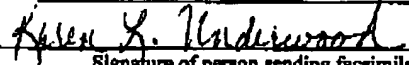
Respectfully submitted,


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